mals, and Zimmerman has confined himself to pointing out the relations between the zoological and botanical researches. Though he therefore does not cite any very large number of the zoological papers, the list in the bibliography embraces almost 600 titles!

We are glad to observe that due notice has been given to the papers by American botanists, among whom may be noted Campbell, Humphrey, Davis, Chamberlain, Schaffner, Harper, Fairchild, Halsted, and Mottier.

This book will be needed in every library, and will be of great assistance to every teacher. It is well illustrated from drawings made chiefly by the author's wife.—C. R. B.

MINOR NOTICES.

MR. JAMES M. MACOUN has recently distributed three contributions to the knowledge of the Canadian flora.[4] The first two cited contain additions to the Canadian flora, additional stations, and the revision of names in accordance with recent monographs. The Labrador list is compiled from all available lists and specimens, being tabulated so as to show the distribution of each species.—J. M. C.

A SECOND CONTRIBUTION[5] to the flora of Yucatan has been issued from the Field Columbian Museum. It includes plants collected by Dr. G. F. Gaumer in 1895, Sr. Porfirio Valdez in 1896, and the author in 1887 and 1895. The contribution adds 120 genera and 272 species to the recorded flora of the peninsula, among which are a new genus (*Setariopsis* Scribner, founded upon *Setaria auriculata* Fourn. and *S. latiglumis* Vasey), and thirteen new species (Agaricus, Asterina, Pestalozzia, Selaginella, Peperomia, Cracca, Argithamnia, Croton, Euphorbia, Pedilanthus, Quararibea, Corallocarpus). So far as recorded 527 species are known from the mainland, and 315 from the contiguous islands. It is interesting to note that Leguminosæ head the list with 100 species, Compositæ following with seventy, Euphorbiaceæ with fifty-two, the remaining families dropping below thirty.—J. M. C.

MR. E. B. ULINE has just published an account of the Mexican and Central American species of *Dioscorea*,[6] being the result of studies at the University of Berlin. Thirty-nine species are included, eleven of which are

[4] MACOUN, JAMES M.—Contr. Herb. Geol. Sur. Can. VIII and IX. Reprint from Can. Rec. Sci. Oct. 1895, Jan. and Apr. 1896. List of the plants known to occur on the coast and in the interior of the Labrador peninsula. Ann. Rep. Geol. Sur. Can. **8**: 353–356.

[5] MILLSPAUGH, CHARLES FREDERICK.—Contribution II to the coastal and plain flora of Yucatan. Field Columb. Mus. Bot. Ser. **1**: 277–340. *pl. 8–21*. D. 1896.

[6] ULINE, EDWIN B.—Dioscoreae mexicanae et centrali-americanae. Engler's bot. Jahrb. **22**: 421–432. 1896.

new. Five new varieties also are defined and various specific reductions indicated. It would seem that the genus was sadly in need of revision, as are probably most of the Mexican and Central American genera.—J. M. C.

MR. GEORGE MASSEE has done excellent service to mycology in his redescriptions of Berkeley's types of fungi.[7] Berkeley's magnificent collection was presented to Kew in 1879, and illustrates his mycological publications from 1836 to 1885, containing over 11,000 species, among which are 4866 types. The earlier diagnoses were brief and superficial, and not at all adequate for the present demands. Mr. Massee has drawn up full descriptions, with figures, of Berkeley's types, using in every case the actual specimens originally employed by the author. About 115 species are thus described, over eighty of which belong to the genus *Peziza*.—J. M. C.

IN 1886 Professor Charles R. Barnes published a key to the genera of mosses recognized in the Manual of Lesquereux and James, which proved to meet a want of the bryologists. In 1890 he published keys to the species of mosses recognized in the same work, including descriptions of those published since the issue of the manual. Taxonomic work among North American mosses since 1890 has been so very active that a new presentation of North American material seemed justified. Accordingly a third edition of the "Analytic Keys"[8] has just appeared, which is intended also to stimulate the study of mosses during the time which must precede the publication of the new manual. The appendix to the Keys contains descriptions of species and varieties, 603 in number, published since the issue of Lesquereux and James' Manual in 1884, and before January 1, 1896. It is only upon the massing of these descriptions that one begins to appreciate the recent rapid development of our knowledge of the North American moss flora. The author feels compelled to call special attention to the large number of new species described by Dr. N. C. Kindberg, and by Dr. C. Müller in collaboration with Kindberg, from the Canadian collections of Mr. John Macoun, stating that there is good reason to believe that a majority of these are not well founded. In this view he seems to be sustained by other bryologists, and it is certainly unfortunate that such a mass of names has been injected into our synonymy, names which in many cases it is impossible to identify. Such a large amount of new material has necessitated extensive readjustment of the keys, which even then could not be made to include all published diagnoses. The author has wisely avoided the making of new combinations

[7] MASSEE, GEORGE.—Redescriptions of Berkeley's types of fungi. Jour. Linn. Soc. Bot. **31**: 461–526. *pl. 16–18*. 1896.

[8] BARNES, CHARLES REID.—Analytic keys to the genera and species of North American mosses. Revised and extended by Fred DeForest Heald, with the cooperation of the author. Bull. Univ. Wis. Science Series **1**: 157–368, 1897. $1.00.

or the publication of new species, thinking it better that this compilation should not be cited in the future literature of taxonomy. For convenience, therefore, Renauld and Cardot's *Musci Americæ Septentrionalis* has been used as a basis, without any intention of expressing adherence to its nomenclature. Although the author emphasizes the fact that this work is a compilation, and does not regard it as of importance enough to be cited, and even feels compelled to apologize for it, nevertheless it represents such a critical insight of the group that bryologists will welcome it as both useful and important.—J. M. C.

MR. RAYNAL DODGE has issued a small manual of the pteridophytes of New England,[9] which will prove of service to New England students of the group. Following each one of the eight families is a brief account of the literature, and in the case of Isoetaceæ a considerable discussion of the taxonomic characters and the best methods of their recognition are given. A new Isoetes is described, *I. foveolata* A. A. Eaton; while some bibliographical confusion has been developed for *I. Eatoni* Dodge. In the manual before us this latter species appears as "n. sp.," while it is fully published, with plates, as a new species, in the BOTANICAL GAZETTE for January last. As Mr. Dodge's manual bears the date 1896, and the publication of the GAZETTE bears the date January 1897, ordinary usage will cite the former as the place of original publication, although the two publications are really synchronous, and the intention was to have the GAZETTE publication stand as the original one. —J. M. C.

THE THESIS of Edwin B. Copeland for the degree of doctor of philosophy, presented to the University of Halle and separately published, has been distributed. Dr. Copeland's subject is the influence of light and temperature on turgor. His experiments are thus summarized: 1. The turgor of the roots is not influenced by the illumination of the shoot. 2. Plants deprived of CO_2 show generally the same turgor as those which can assimilate. 3. In organs elongating in darkness turgor is lower than in control cultures, but it remains constant after growth ceases. No influence is exerted by the supply of food, whether abundant or not. 4. In those organs whose growth is less than normal under etiolation, the turgor is as high as usual or higher. 5. If plants are brought from light into darkness the turgor of the already grown parts is not altered in any characteristic manner with relation to the environment; but if the transfer be in the opposite direction a slow reaction of turgor of the stems is observable. From these experiments he concludes that the amount of turgor of roots, stems, and leaves is only remotely dependent on assimilation, and the substance which produces turgor cannot be used even

[9] DODGE, RAYNAL.—Ferns and fern allies of New England. 16mo., pp. viii + 52. Willard N. Clute & Co., Binghamton, N. Y. 1896.

to prevent the death of the plant from starvation. The various conditions of temperature or illumination which affect growth affect the turgor in exactly the opposite manner, so that if growth is retarded turgor rises, if growth is accelerated turgor falls. Turgor is regulated by, rather than regulates, the rapidity of growth.—C. R. B.

THE SEMI-ANNUAL REPORT of Schimmel & Co.,[10] for October 1896, gives special attention to the following topics: Almond oil, which is used extensively to perfume cocoanut oil soaps, is more certain to produce a white soap which will not discolor if it is free from hydrocyanic acid; otherwise most careful attention to temperatures is requisite in the process of manufacture and drying.——The regions of China yielding cassia oil have recently been traversed by O. Struckmeyer, and a map shows their location, which is chiefly in Kwang-si and Kwang-tung, south of the Si or West river, along the parallel of 23° N. and between 110° and 112° E. The oil is distilled from about 70 per cent. of leaves and 30 per cent. of twigs.——Bergamot, lemon and orange oils are discussed, especially in relation to adulterations.——Some interesting figures are given of the peppermint crop in the states of Michigan, Indiana, and New York, which will produce this season nearly 200,000 pounds of oil, of which Michigan produces about two-thirds. The largest peppermint field in the world is in Allegan and Pearl counties, about a mile long. ——The rose fields for which this firm is famous yielded the past season 265,000 kilos of roses, representing about 60 kilos of pure rose oil.—C. R. B.

NOTES FOR STUDENTS.

THE EARLIEST general presentation of the Caryophyllaceæ, that of De Candolle's *Prodromus*, can claim little merit. In fact, it is hard to say whether the treatment of the Alsineæ by Seringe, or of the genus Silene by Otth, shows the greater haste and superficiality. Far more scholarly was the work of Fenzl, who, in his admirable treatment of the Russian and Siberian Alsineæ, in his contributions to Endlicher's *Genera*, as well as in scattered and unfortunately fragmentary papers, shows the first critical insight into the order. Since the time of Fenzl, the most noteworthy contributors to our knowledge of the Caryophyllaceæ have been Rohrbach, Boissier, and Williams. Of these Rohrbach, during his short but active life, completed masterly monographs of Silene and Melandryum, and also prepared the Caryophyllaceæ for the *Flora Brasiliensis*, while Boissier in his *Flora Orientalis* has given very full and accurate descriptions of the numerous Mediterranean and oriental Caryophyllaceæ, his treatment of Silene being especially noteworthy. Of all living writers, however, Mr. Williams has doubtless the broadest

[10] Fritsche Bros., Leipzig and New York.